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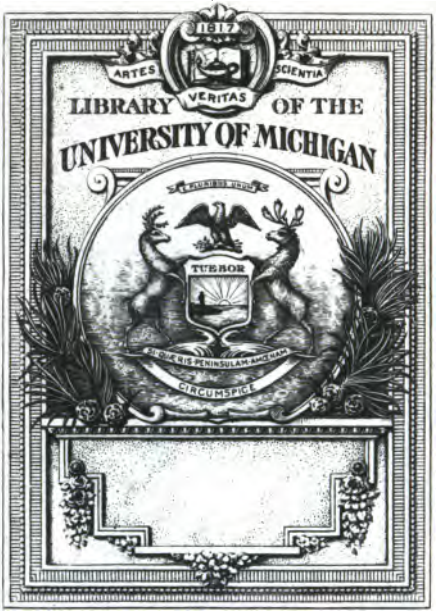

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THE

VOYAGER'S COMPANION,

OR

SHELL COLLECTOR'S PILOT;

WITH

Instructions and Directions where to find the finest Shells;

ALSO FOR

PRESERVING THE SKINS OF ANIMALS;

AND THE

Best Methods of catching and preserving Insects, &c. &c. &c.

BY J. MAWE.

Author of Treatise on Shells, Lessons on Mineralogy, Travels in Brazil, &c.

FOURTH EDITION.

LONDON:

PRINTED FOR AND SOLD BY THE AUTHOR,
149, STRAND;
AND BY LONGMAN, HURST, REES, ORME, BROWN, AND GREEN, PATERNOSTER ROW.
1825.

PRINTED BY W. M'DOWALL, PEMBERTON ROW,
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DESCRIPTION OF FRONTISPIECE.

Low water, and the beach strewed with most beautiful shells and coral, to tempt the traveller, and rouse his mind to contemplate the beauties of the deep, and the wonderful works of an Omnipotent Being—

> "Who taught the little Nautilus to sail,
> "Spread his thin oar, and scud before the gale!"

The bird rising from the water, with a shell in its beak, is emblematical of—

> "Seek, and ye shall find."

ADVERTISEMENT.

SHOULD any person be desirous to send a box of shells, &c. to the author, he will pay the charges, and make an adequate return in whatever way the consignor may direct. It is proper to observe, that they must be packed in cases, and entered on the ship's manifest, and marked as below, which will prevent any risk of seizure.

J. MAWE,
King's Warehouse,
LONDON.

N. B.—When the ship is bound to any out-port, if the case be directed as above, it will be duly forwarded to the address.

INTRODUCTION.

IN offering this little Work to the Public, more especially to Sailors and Travellers, it may not be improper to state, that the following pages are, generally, the result of my own observations, during fifteen years that I was at sea, and subsequently whilst I was resident for six years in Spanish America, and the Brazils.

HAVING sailed to most parts of the globe, I may say, from experience, that there is no station which affords such facilities for collecting shells, and other productions of Nature, as

that of commander or officer of a ship, whether he please to make it a source of amusement, or profit.

In this, as well as in every other division of natural history, the knowledge requisite to discover the scarce and rare varieties, can only be acquired by practice. To particularize objects that may present themselves to the traveller, is not the aim of this work; but, for the benefit of science, and his own interest, it is desirable to excite him to collect all he may meet with, until he has skill to select the most interesting: and I can assure him he will be amply remunerated for his labor. I say *all*, for however common they may appear in the countries he visits, they may be scarce in England.

Several years ago, I published a small pamphlet, entitled "Directions to Captains of

Ships, Officers, and Travellers; particularly to those engaged in the South Sea Fishery," &c. which went through two editions. Since that time, science has rapidly advanced, and it may be said, there are but few individuals who have not felt a desire to obtain something more than an ordinary knowledge of the productions of nature, whether mineral, animal, or vegetable. The attainment of this desirable object has been rendered extremely easy by recent publications, which embrace, separately, the various branches of natural history; and there is no department which has received more illustration than Conchology*.

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* The Author has just published the Systems both of Linnæus and Lamarck; as well as an Introduction to Conchology according to the Linnæan Arrangement, with colored plates and lists of the names of the various species under each genus, written expressly for Students, and containing particular instructions for Collectors.

WHEN at sea, I have frequently lowered down my boat to take in floating wood, (wreck), sea-weed, &c. which often contained many interesting vermicules and small shells. The wood was generally pierced by the Teredo Navalis.—This animal first attaches itself in the state of animalcule to the bottoms of ships, if not sheathed with copper, where it increases rapidly, and in a short time pierces the planks, growing larger, and forming its shell as it penetrates.

WHALES, tortoises, &c. have frequently barnacles of a rare description adhering to them: indeed the Lepas attaches itself generally to substances of every description.

THE Author having observed that the bottoms of ships soon became covered with barnacles in tropical climates, made the following experiment while lying at Magadore, on the

coast of Africa:—He attached a piece of wood, as a buoy, to an anchor, and perceived that in a few days it was covered with a slimy substance, which shortly after became green; and, in less than a fortnight, a number of minute barnacles appeared, which daily increased in size, and in the course of six weeks exceeded an inch in length. Pieces of wood are frequently taken up at sea entirely covered with Lepades in groups, having tentacula a foot long, and of a beautiful bright pink color, accompanied by muscles in great abundance. This seems to prove that the barnacle exists in the sea, in the state of animalcule.

LIMPETS may be found in all parts of the world, adhering to rocks, wreck, &c. &c.—In many places the sea seldom ebbs without leaving shells of various species: among the most common that are exposed for sale in the markets of the countries the traveller may vi-

sit, the connoisseur might discover some rare or interesting varieties.

On the sand, at low water, bubbles of froth may be frequently observed: these are indications that some marine animal or shell is concealed underneath, which may generally be found by digging a few inches below the surface.

I shall conclude my observations upon this subject, with strongly recommending the voyager to employ fishermen to collect for him.—These men are well acquainted with the places where shells may be found, and, for a trivial remuneration, would reserve what they met with.

It would also amply repay him, to hire an expert negro to go into the interior in quest of Land-shells; for, though they are less beautiful than those of the Sea, yet they are interest-

ing from their great variety, and desirable from having been hitherto seldom attended to.—In Brazil, at the royal farm of Santa Cruz, where I resided some months, holding a high official situation, I adopted what I here recommend, and succeeded to the utmost of my wishes.

It is but justice to acknowledge the many favors I have received from gentlemen abroad, who have repeatedly sent to me interesting subjects, which enrich my collection.

CHAPTER I.

On Cleaning and Packing Shells.

SHELLS frequently receive considerable injury, and sometimes are entirely spoiled, by the attempts of unskilful persons to clean them*. It is therefore of essential consequence that the following observations be most strictly attended to.

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* The sailors of whale ships often grind down the fine epidermis of rare shells, on the voyage home, to make them *look pretty*.

When a live shell is found, it would soon become offensive, unless the animal were taken out. To perform this, nothing more is requisite than to put the shell into a kettle of water, and let it heat gradually until it boils.—After a few minutes, the shell should be taken out, and put into a bucket of cold water; the animal will then shrink, and may generally be shaken from the shell; but if it should still adhere, it may be extracted with a crooked pin or hook, great care being taken not to injure the mouth, which is commonly the most tender part.*

* The animal is sometimes removed from the shell by burying it in the earth, for two or three weeks: when this method is adopted, the shell should be carefully washed to destroy the offensive smell arising from the decomposition of the animal.

Oysters, muscles, clams, or limpets may be treated in the same way; or they may be opened with a knife, and the animal cut out; which must be done very gently, lest the shell should be chipped or broken: but the former method is preferable, since the shell opens spontaneously, when in boiling water. The same care should be taken in separating limpets from the rocks, for the least chipping renders them little esteemed.

This operation being performed, the shells should be immediately rinsed and stowed away, without any further attempts at cleaning or polishing. The epidermis forms a principal character, and should on no account be removed; the perfection of a shell depends on its being in its natural state.

Many shells are so extremely beautiful, that few persons can resist the temptation of hand-

ling them, by whom they are frequently dropped and chipped, and thus rendered of little value: the spectator is also often desirous of possessing them. The author has known many instances where the cream of a collection made during a long voyage has been carried away by those to whom it was shown. The collector should therefore remove them out of sight as expeditiously as possible.

We shall now proceed to describe the best methods of *packing* shells.—Pour some saw-dust, or if that be not at hand, some sand from the beach, into a chest or beef barrel; into this may be deposited the large and strong shells, covering them with sand, or saw-dust; but the tender varieties should be packed singly in small boxes, and introduced to fill up the interstices between the large shells. The Paper Nautili may be packed, with great care, one within another, in shallow boxes, which should

be filled with bran, or any light packing, as moss, cotton, or paper shavings; as heavier substances would chip the edges of the shells, and diminish their value. The boxes into which these are packed, should never contain more than one layer. Small chip boxes may be used for particular varieties, but, as these are very slight, they should be afterwards packed within the larger ones.

When all are full, they ought to be stowed away in an empty barrel or chest, which should be finally closed or nailed down; properly marked, and entered in the *Ship's* manifest, as Shells—to prevent seizure. The Custom House expenses are so trivial, and the process so easy, that the Author will have pleasure in assisting any one who may be unacquainted with the routine.

CHAPTER II.

Localities of Shells, &c.

SHELL-FISH are generally esteemed for food, and a great variety are to be found in the markets of almost every sea-port, both abroad and at home: at Billingsgate, Portsmouth, Plymouth, &c. we have our periwinkles or whelks, muscles, cockles, scallops, gapers, and oysters; the same species are also exposed for sale in the markets abroad, but they differ from those which are found on the English coasts. The pectens, scallops, cockles, &c. from France and

Spain generally vary in some degree from our's, which renders it desirable to possess them.

THE common shells (except the oyster) which are found in the Guadalquiver, at Cadiz, and up the Mediterranean, at Cette, Marseilles, and more particularly at Naples, (where there is a great variety of coral), are desirable; and even those which resemble the species in the English seas, for, on close examination, they are found to differ materially. We are little acquainted with the shells from the south coasts of the Mediterranean, Malta, Sicily, or the Archipelago.

WHEN at Magadore, I found fine limpets, and an interesting variety of barnacles; also muscles, and various land helices, which I persuaded the Moors to bring from the interior.

MANY varieties of shells, some of which are

large and in great request, have been brought from the Gambia, and Senegal *. The rare reverse Achatina is found in this country, but its precise locality is not ascertained.

Of the shells from the Cape de Verde Islands, as well as from the cluster of the Canaries, we know but little: the sea-shells are common to both, and also to Madeira; from the latter we have lately received some rare land and fresh-water shells. Others of equal rarity, no doubt, will be found there, and also at Cape Verd.

At Goree, and all along the African coast, varieties of shells occur, which are beaten to fragments by the surf. At low water, after

* Snail shells. The animals constitute an article of food, and are much used in soup in the various ports of the Mediterranean, where I have often seen them boiled in their shells, and served up with rice,

a gale, the beach is strewed with numberless odd valves, and broken specimens of rare varieties; and, strange as it may appear, I have seen a box full of valves, from this coast, out of which a true pair could not be formed.

THE negroes who trade to Sierra Leon, have been induced to bring land shells from the interior; but, as they often apply fire to the shell, in order to drive the animal out, they are thereby much injured, and often entirely spoiled.

FROM Cape Palmas, the Gold coast, and Bight of Benin, and from the rocks and islands in the vicinity, more particularly Annabona and St. Thomas's, and the coast of Loango, many rare shells have arrived. We know but little of the shells found in the Congo or the interior, but it is probable that many species unknown to us are produced there. We have seen

many fine specimens from the Portuguese settlement at Benguela; one of the rarest shells known, and several very scarce varieties, have been brought from thence. This coast also produces large quantities of the Sea-fan (Gorgonia), and interesting sea-weeds (Algæ), all of which are desirable.

FARTHER south, from Saldanna Bay to the Cape, the shells are similar, and in great variety, but are generally broken on the surf-beaten shore. The coasts on each side of the Cape abound with interesting shells.

HAVING taken a cursory view of the European and African coasts, I now purpose to describe what the Collector may meet with in North America: and although it appears that

cold climates in general are unpropitious to the production of richly-colored shells, yet he will discover among them some interesting varieties.

On the coast of Labrador a beautiful substance called Labrador Spar, is found in abundance; for the bright iridescence of its colors it stands preeminent in the mineral kingdom. From a missionary settlement of the Moravians at Okkak, a great number of singular, black anomias have been lately received; they inhabit a salt lagoon near the coast. The varieties of the same shell, from Greenland, are similar and larger.

Thence, along the coast of America, the only species that has been found worthy of notice, is the Ostrea Arborea, or Tree Oyster. In the Chesapeak, at Norfolk, Hampton,

and up James River, these oysters have been found grouped on the arms of trees and shrubs that spread out their branches horizontally from the banks, and are washed by the flood tide, and dry on the ebb.

THE Bermuda Islands and adjacent reefs produce many interesting shells, as the Ostrea Margaritifera, (Pearl Oyster); Paper Nautilus; some fine Chitons, there called Sand Turtles; and Corals of great beauty. The Conch that contains the highly valued pink pearl, is to be found there; petrified stumps of the Palm-tree, some of which are very fine; many varieties of Madrepore, Sponge-coral, Gorgonia, and a curious little animal called Hypocampus; birds of great variety, insects, and a multitude of other interesting subjects, are brought from thence. The romantic caves, and magnificent coral reefs that adorn the island of

Bermuda, have awakened the raptures of the Poet—

> Come with me, and we will go,
> Where the rocks of coral grow.

THE coasts of Georgia, and North and South Carolina, produce many species, particularly of the Olives, (Voluta Oliva), of great beauty.—From the group of the Bahamas, and the rocks by which they are surrounded, many shells have been gathered, which are similar to those found on the coast of Cuba. From the interior of this island, many rare shells of considerable value have been lately brought to Bourdeau by a French vessel.

OF the testaceous productions of the island of New Orleans, the Mississippi, and the whole of that range, we have obtained but little information.

At Panama, both fine and common shells are in great abundance. Some rare specimens have found their way from Vera Cruz, which probably came from the Pacific. And we have lately received a few rare fresh-water shells from the Ohio, which the American naturalists are sharply looking after.

From the West Indies, shells have been brought in such abundance, and of so little interest, that a strong prejudice exists against them: but, from a source so productive, it is highly probable that some rare shells will be discovered, when gentlemen of science in these islands shall think conchological researches worthy of their attention. The collections received from thence are made by the natives, and calculated to please mere novices only.—On the coast of Jamaica, the keys, and pallsades, Conchs (Strombus Grandis), Helmets, or

Queen Conchs, are extremely abundant, as well as at Montego-bay, Savanna, &c. At Martha Brae, and other parts of the island, may be found very fine corals.

THE islands of Tortola, Porto Rico, Guadaloupe, and Martinique, produce very fine Trochi, bivalves of great beauty, Chitons, and a considerable variety of common shells; and many interesting specimens have been found in the Savannahs and Lagoons.

FROM Grenada, Trinidad, the mouth of the Oronoko, and the adjacent coast, some rare shells, as the Venus Dione, &c. have been brought; and it may be expected, that, at some future day, many new and beautiful varieties will arrive from thence.

A FRIEND of mine, commander of a ship, who went to Demerara, employed, at my re-

quest, an expert negro to go into the interior, to collect land and fresh-water shells. The man was absent about a week, and collected a box full of Helices, commonly termed Snail-shells, and muscles: these were packed with refuse cotton, and the whole expense did not exceed six dollars. I cannot too strongly recommend the hiring of fishermen or clever negroes, (who should be liberally remunerated), to collect as well as to pack; and thus free their employers from any trouble.

THE land shells and muscles which may be found over the whole of the vast territories of Essequibo, Surinam, and Cayenne, are very desirable. I would amply repay any one for what he might bring from the interior of those countries: the rivers, lakes, &c. are extremely productive.

OF the shells from the Amazons, the great

island Joannes, and from the district of PARA, we know little or nothing, except that there are found in the interior many fine helices, muscles, &c.—Shells, therefore, however common in those places, would be objects of attention here.

THE land and fresh-water shells from Pernambuco, Bahia, and Rio Janeiro, are quite as interesting, if not more so, than those which are found on the coast. I have lately received through the kindness of Dr. Gardner, several new varieties from the interior, of great interest and value.

To the southward of Rio*, near the isle of

* At the Royal Farm, Santa Cruz, about forty miles from Rio, where I held an official situation, (first administrator), I

St. Sebastian, the Paper Nautilus, the famed Cedo Nulli, and other fine shells are frequently found.

A Few years ago, after a gale of wind, a spring tide ebb left a reef of Nautili and other shells along the coast of Bayrah, mutilated by the surf. A Government ship was there at the same time, loading with timber: on her return to Chatham, I received intelligence from an officer on board, that he had collected a quantity of them. I sent a person down, who purchased of the steward, cook, &c. to the amount of twenty-five pounds. A similar cir-

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directed some expert negroes to pick up what small shells and curious animals they might meet with: these they left at my house as they passed; and, by allowing them a small compensation, I obtained many fine shells, insects, birds, reptiles, and small animals.

cumstance occurred under my own observation, at the mouth of the Guadalquiver, near Cadiz; where, after a gale of wind, and at ebb tide, a reef of bivalves was left, several feet high, and above a mile in length, from whence I selected many fine varieties. Indeed, almost every gale of wind throws up some interesting shells.

FROM the interior, near Santa Cruz, from Isle Grande, Sebastian, Porcos, and that Archipelago, also along the coast to Bertiojo and Santos, I collected many curious shells; but, strange to tell, I have found it difficult to persuade any one to send me another supply, although they may so easily be obtained. No, they think them common, and because they *really are so there*, they do not bring or send them. We know nothing of the shells produced along this coast, more than that they are in request for the table. The low land about

the harbour of Saint Francisco, must produce many varieties.

When at the isle of St. Catherine, and the bays near it, I employed the fishermen, and obtained from them many valuable varieties of limpets, barnacles, &c. star-fish, coral, and sea-weed; also muscles and land-shells from the lagoons, to which I gave the preference, as some of them were unknown species.

From the Rio Grande, though so large a lagoon, we have not received a single species.

In searching for shells in the river Plata, I was altogether unsuccessful, notwithstanding a gale of wind, called a Pampero, had left the river dry in many places, from two to three miles in extent; nor were the fishermen, whose attention I engaged, more fortunate.—

I have been told, however, that fine volutes are met with there.

MANY fossil shells may be found under a black vegetable soil, resting on granite, near Monte Video, a little beyond the gate, going to the well, to which I was conducted by a most worthy clergyman, the Rev. D. Damaso Larranaga. This excellent priest has paid considerable attention to natural history; and to his kindness I was greatly indebted, during my residence at Monte Video.

I COLLECTED some good shells in the interior, and at Barriga-negra, near the river Sebollitee, where I was detained many months, on my parole *.

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* See the Author's Travels through the gold and diamond district of Brazil.

THE rocks which form the Falkland Islands, produce very fine limpets. Many good shells have been brought from Magellan Straits, and some fine muscles and rare Buccina from Staten Land. The remote islands of South Georgia produce fine limpets of a beautiful bronze-like lustre, and thick strong Buccini, which are highly desirable.

AFTER doubling Cape Horn, notwithstanding the great intercourse which has existed of late years, between this country and Chili, it is surprising that we should know comparatively nothing of the testaceous productions of that great extent of coast, or of the numerous fine rivers and islands belonging to that territory. From Peru, however, many beautiful and rare varieties of shells have been brought, more especially from the shores of Callao, and farther north. Hence, until we reach the bay of Panama, we are equally unacquainted with

the shells that may be produced on the coasts and rivers.

In the cluster of islands in the bay of Panama, there is a fishery for pearls, which are large and well formed, but of bad color. Many fine murices, and other rare shells have been found there.

The Gallipagos islands are rich in shells;—it is astonishing that more varieties have not been brought from thence. I have received, through the favor of some of the captains and officers of whale ships, some choice specimens.

Farther north we meet with no shells, until we arrive at Ceres Island, off the coast of California. From this island the finest ear-shells, (Haliotis Splendens), have been brought: for

those which fell into the Author's hands, in less than a year, he paid above 100*l*: they were generally brought to him by sailors belonging to ships that went there for seal skins. It may be remarked, that the lepas of these seas, as well as many of the other shells, differ from the same species in the Atlantic, particularly the limpets, muscles, and clams.

Still farther north, with the exception of some rare trochi and muscles from Nutka Sound, no shells of any interest have reached this country.

In crossing the Pacific, the Sandwich islands are frequently visited; the shells from whence are in great request. This cluster is surrounded by large coral rocks, amongst which is a fishery for the *Beche de Mar*, (Sea Grub), for the Chinese market. A ship lately from

thence, has brought some beautiful pectens and other bivalves.

To the south of the line, are the rich groups of the Marquesas and Society Islands, all of which produce rare and most beautiful shells. From Magdalena a fine lot once fell into my hands, which were collected by a celebrated circumnavigator. Commanders and officers of whale ships, &c. are requested to pay particular attention to the shells, and whatever is thrown up or strewed along the beach of these islands.

From Otaheite we have received many rare shells, the limpets and chitons from thence are much in request; as well as the land shells, which, possibly, may prove to be new species.

From New Zealand, particularly Dusky

Bay, rare trochi, hammer oysters, and beautiful cones have been brought; and in the other bays of these islands, rare volutes and valuable shells are found, which visitors have until lately neglected.

THE coast of New Holland, and the adjacent islands, and particularly the straits of the southern part, produce many valuable shells. Van Dieman's Land offers a vast field to the naturalist, particularly to the conchologist, zoologist, and entymologist, who would be amply remunerated for whatever they might collect; and I may here state, that, for several years, I paid* more than Two Hundred

* One of the finest collections of shells ever brought to this country, was formed by Col. Robson, Lieut. Governor of St.

Pounds per annum, chiefly for shells, to gentlemen who amused themselves, and profited largely, by collecting. The finest lot of the Turbo Phasianus, that was ever brought to this country, was gathered by two boys in Western Port.—A whale-ship off the coast sent a boat on shore to search for fresh provisions, as birds and animals: while the crew were shooting, the boat grounded amongst large stones and weeds; and, during the time before she floated, the boys left in charge of her employed themselves in gathering the shells entangled in the weeds and about the stones, from whence

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Helena, who was a connoisseur. He obtained them from Dutch, Danish, and Portuguese ships, particularly South Sea Whalers.—The commanders of these ships, wanting refreshments, found it their interest to present him with any shells he might please to select. Hence that gentleman formed a superior collection, which I purchased after he retired from the service.

they took many limpets and large chitons.—On their return home they brought them to me, and, though I gave them the price they demanded, I thought it not only right, but politic, also to make them a handsome present, in order to stimulate them to keep a sharp look out for shells, on another voyage. Here, I am sorry to state, that officers seldom trouble themselves with collecting. It is to be lamented, that the beautiful productions of nature are not more noticed: the boys, or inferior officers, are generally the only persons who save what they may pick up, and thus add a few pounds to their wages.

THE numerous islands in these seas abound with fine shells; but from New Caledonia, the New Hebrides, and the Carolinas, none have yet been received. And strange as it may appear, the author of the Narrative on the Pel-

lew Islands has not described, or even noticed, the shells that are found there. An attempt was made, some years ago, to establish a pearl fishery on the coast of one of the Fegees, from whence some rare shells have been brought. The finest Volutes ever seen in this country, were collected on Bligh's Island *.

FARTHER north, are the Ladrone Islands, a highly interesting group: the rare Cyprææ are from thence. At Guam, a friend obtained for me the most beautiful Cypræa Aurora that

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* Named after Admiral Bligh. His lady possessed one of the finest collections of shells in Europe. The admiral having so often circumnavigated the globe, and being afterwards Governor of New South Wales, she was enabled to enrich her collection with the most rare and valuable species from all parts of the world. This superior and extensive collection passed into my hands for a valuable consideration.

has yet appeared: other rare and interesting varieties are also found there.

THE vast archipelago of the Philippine Islands is a rich field for the Collector: here the Chinese carry on a trade for the pearl shell, which is left on the coast at low water. From hence we have received the Imperial Volute, Junonia, and many other varieties, of great rarity and beauty. From some Spanish and Portuguese traders I have been favored with many rare specimens. Of the land shells of these islands we know nothing, but have great reason to suppose, that the Helix Labarynthica is from hence.

THE shells from the Chinese seas and rivers are generally interesting: they have an opalescent hue, and are in great demand for inlaying wood and Japanned work. The Japan

Islands, Formosa, and the entrance of Canton river, produce rare shells. The scarce varieties of the Nautilus are from the coast of Japan. The productions of these seas may be bought at the small shops in Canton, and are often vended by itinerant dealers. If any of the commanders or officers of our ships would employ an intelligent fisherman to collect land and fresh-water shells, he might, for a few dollars, depend upon obtaining very many interesting shells, for which he would be amply remunerated upon his return. The very commonest productions of the Chinese seas have been neglected, (probably from their general occurrence or uninviting appearance), although desirable in this country; while, on the other hand, *carved Nautili*, and large green shells, which have been polished, to display their pearly lustre, have been bought with avidity, but have failed to repay the collector, or gratify the connoisseur.

GOLD and Diamonds, which are found in the soil of the rivers, have been brought from Borneo; but we are ignorant of what shells may be produced on the coast of that large island, or in the interior.

FROM the extensive group of the Celebes and Sooloo Islands, very fine shells have been received: these were collected by officers of ships of war, or circumnavigators. One of the rarest shells known, was brought up adhering to the mud on the anchor of an Indiaman, when getting under weigh, in the straits of Macassar. As ships are often obliged to come to an anchor, and are sometimes detained for a length of time amongst these islands, the Malay fishermen, were they properly encouraged, would bring on board many interesting and valuable shells. The elegant and scarce perfume Ambergris is met with in these seas.

From the islands between the north coast of New Holland and New Guinea, especially Timorlaut, Aroo, and the Banda Islands, many valuable shells have been brought: the rare Murex Aruanus is from these seas.

To the westward, the cluster of islands at the east end of Java is finely situated for shells. At Timor, is a reef of beautiful red coral.—A captain of a whaler, while at this island, received from a fisherman, whom he had employed, numberless Echinites, Volutes, Cones, and Cardia; some rare Barnacles and Limpets; and Chitons of an extraordinary size.

We may judge, by the few collections of shells that have been brought from Batavia, that the island of Java must produce many

fine varieties, although they have hitherto been unnoticed.

On the coast of Sumatra, is found the rare Strombus Fusus, and many other valuable shells. A Serpula Gigantea, (a tubular shell about an inch in diameter), was dug out of the bank of a river after an earthquake. For the possession of this rare species, I am obliged to Mr. Griffiths, a gentleman high in the service of the Hon. East India Company. Sumatra is also rich in gold, which is found in the alluvium. The neighbouring Isle of Banca is celebrated for its tin, which is likewise found in the alluvium. In some parts of the island, the strata of this metal are only a few inches below the surface, and of considerable thickness.

Pulo-penang, and the other islands in these seas, produce many fine shells; and from

Malacca; several specimens of considerable value have been received. Now that Sincapore has been ceded to us, we may expect that many new shells, and various other subjects of natural history, yet unknown to us, will arrive in this country from the Burmese empire.

To the northward of Sumatra, are the Nicobar islands, which give name to the fine Cone, (Conus Nicobaricus): the Moravians had a settlement there, by whom some valuable shells were sent to Europe, which ultimately fell into my hands. In the Andamans a British factory was once established; the beauty of the shells attracted the attention of the settlers, who sent home some fine specimens. During the war, these islands were abandoned, and the shells from thence are consequently become rare and much in request;

the limpets and chitons were fine and of large dimensions.

PROCEEDING northward, along the whole extent of coast, which forms the Bay of Bengal, it is surprising that only one shell, a little black Nerite, which is said to be found in the Hoogly, a branch of the Ganges, should have arrived in Great Britain from that country.—And it is still more astonishing, that we have received, from the interior of India, so few land or fresh-water shells, when we consider the extent of our possessions in that peninsula, and the number of intelligent officers belonging to our numerous military establishments. The French are much richer in the productions of India: indeed, *their* officers and merchants have at all times paid particular attention to the various departments of natural history.

MADRAS presents such a surf-beaten coast, that no perfect specimens can be expected to be found there. The Dutch, when in possession of Tranquebar, sent from thence many fine shells, which now enrich the cabinets of Europe. The Helix from Seringapatam, is a most beautiful specimen.

WE now come to the justly famed island of Ceylon *, well known to Conchologists for the fine and rare Volutes, Cones, Trochi, Venuses, Mactras, &c. found on its coasts; also for the land and fresh-water species from the interior.

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* Soon after the capture of Ceylon, a gentleman in the Civil service purchased for me the Dutch Governor's Collection, which was many years in forming, and intended for the Museum at Harlem. This grand collection contained the finest specimens peculiar to the island and neighbouring seas.

There is here a grand pearl fishery, where the divers employed frequently bring up other shells, which are always in greater perfection than those found on the beach. On one side of a peculiar bank, adjoining the coast, is a fishery for the Voluta Pyrum, (Shank-shell), which, if we may credit report, is never found on the other side. This fishery is in the hands of Government; and, as the shell, when cut transversely, is formed into armlets and various other ornaments, which are worn in every part of India, a considerable revenue is derived from it. The common shells also, which are found on the coast of this island, are desirable; the limpets, cockles, oysters, chitons, and barnacles, are much admired, and in great request.

On the Malabar coast, at Cochin and Tillicherry, I gathered some rare *Fuci*, and a few

small shells, but of little importance. At Old-woman's Island, near Bombay, I found some rare shells; among which was a very fine, though small, Bulla Volva.

HENCE, until we approach the Persian Gulph, I am not aware that any shells, worth notice, are to be found. From the sands and shores of the adjacent coast, many extremely fine varieties have been gathered, which bear the distinguished names of the Persian Crown, Voluta Gambronica, &c.

THE Red Sea, and its islands, produce many fine shells. Lord Valentia, (now Earl Mountnorris), during his travels in those parts, discovered some new varieties. I take this opportunity of acknowledging his Lordship's generosity, in presenting me with his duplicates. Science is also indebted to his Lord-

ship for the discovery of some rare exotic plants, minerals, &c.

THE extensive island of Madagascar is highly deserving of attention: its coasts abound with shells, particularly Buccina, Cyprææ, Strombi, Murices, and Chitons; and it is probable that its rivers produce Muscles, some of which might prove to be new species; but of these, as well as of the land shells, we have at present no information. It also produces Gold, highly diaphanous rock crystal, with various other minerals; and insects and birds of extraordinary beauty. It is much to be regretted, that an island so interesting to the Conchologist, Mineralogist, and Entymologist, should have remained so long unexplored by us. The French have derived many fine specimens from thence, in these three departments of natural history, which were collected during the time

it was in their possession—this ought to stimulate us in our researches.

We know nothing of the shells that occur on the eastern coast of Africa, until we arrive at Zanzibar and Mozambique. The fresh-water and land shells cannot fail of being extremely interesting. It is to be hoped that we shall receive many new species from the ships now surveying the coast. The harbour and bay of Mozambique, are extremely rich in shells, generally the common varieties of the Cypræa Tigris, and Bull's Mouth (Buccinum Rufum). The exterior of the latter has a stratified appearance when cut, and resembles an onyx. Most beautiful figures are carved upon it, which closely imitate the finest antique gems, and are known under the name of Shell Cameos: this species of engraving is carried to great perfection in Rome. The com-

mon or *right* Whales, which are caught in these seas, have their jaws frequently covered with curious barnacles. Numerous chitons and limpets are found adhering to the rocks on various parts of the coast. The exports of Mozambique are at present almost exclusively confined to ivory, gum, gold-dust, ostrich feathers, and wax; but it may be expected that shells and minerals will form a part, when some of our enterprising countrymen in this settlement shall devote a few hours, by way of recreation, to the collecting subjects of natural history.

THE group of islands called Sychelles, produce an imemense quantity of shells of different species, but none very rare or valuable.

THE Comora Islands, particularly Johanna, abound with common cowries, of which I have

seen large heaps collected on the beach, and small vessels loading with a peculiar species of them, which pass for currency in Africa, and some parts of India.

The Isles of Bourbon and France are highly and deservedly celebrated for shells—and it may be remarked, that whatever is produced there, is the most beautiful of its species. The famous Manteau of St. Jaques is fished up from the numerous coral reefs on some parts of the coast. The regret we have so often had occasion to express, does not apply to the officers and men garrisoned in these islands. They on the contrary, employ much of their leisure time in fishing for Harps and Olives, which they effect by means of a baited hook, and a line upwards of a thousand yards long. Of course, the shells that are brought up from so great a depth, not having been ex-

posed to the turbulence of the waves, are in a very high state of perfection. The reader will be surprised to learn, that I have paid several thousand pounds for collections of shells, which I have received through the hands of officers of distinguished rank in Ceylon and the Isle of France.

THE ship which took out the first settlers to Algoa-bay, on her return home, brought me many interesting land and fresh-water shells, which the commander was kind enough to collect. On the coast about the Cape, as well as on the rocks and islands in the bays, some good varieties have been found, particularly limpets, and large zebra-striped land shells, which are tender, and require great care in packing.

I HAVE now taken the navigator through most of the seas, and have briefly enumerated

the places where he is most likely to discover fine and rare shells. I shall now conclude this part of my subject in his own language, advising him to keep a *good look out,*

THE Science of Conchology was scarcely known in this country thirty years ago. Formerly the Dutch and the French, masters of those seas where the finest shells abound, formed the only collections of importance; from which the immortal Linnæus derived the materials for his excellent system. To the introduction of this elegant branch of natural history into Great Britain, we are principally indebted to the late Duchess of Portland, who became its patroness: many of the rarest shells extant have adorned her Grace's cabinet. Since that period our fair country-women, whose solicita-

tions no one can withstand, have been the means of stimulating our enterprising voyagers to collect the beauties of the deep; and we may now boast of possessing the finest cabinets in Europe.

AMBERGRIS.

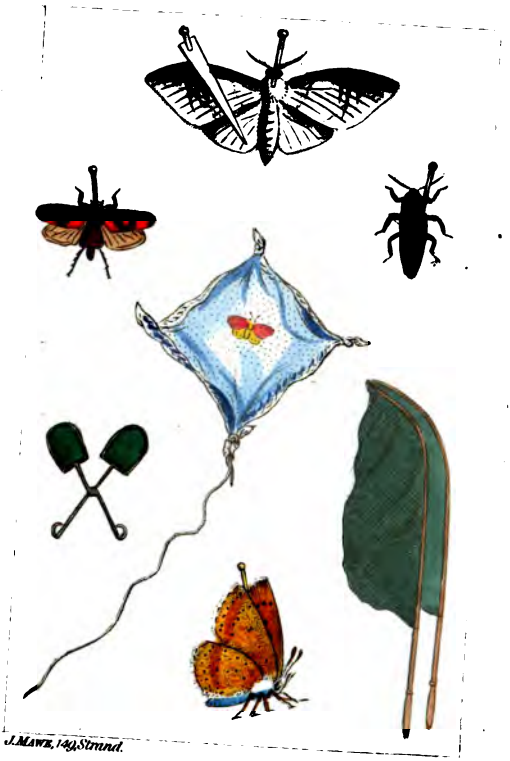
AS this substance is a marine production, I have thought proper to introduce some account of it here.

THIS delicious perfume is, without doubt, the produce of the Sperm-whale*, and probably is the result of a disease in the digestive organs. Captain Poole, the commander of a whale-ship, in pushing a lance through the blubber, and near the passage of the abdomen, felt it strike against something hard, and on

* The fibres of the skin from the head of this whale are of great tenacity, excellent ropes may therefore be manufactured of them, especially for situations exposed to much friction: it is said that they are stronger than catgut, and make better strings for violins.

drawing it out, the edge was much blunted. Having cut into the intestine canal, he perceived that the lance had struck against two large pieces of Ambergris. There is every reason to suppose, that this substance sometimes stops up the passage of the abdomen, and ultimately occasions the death of the animal.

MANY other instances have been recorded of Ambergris having been found in the Sperm-whale, and also on the coast, after a diseased fish has been seen near the shore.



J. MAWE, 149, Strand.

CHAPTER III.

On Insects.

THIS branch of natural history has received considerable attention; but to obtain even a slight knowledge of the subject, much time and great labour are required. The collecting and preserving of insects, is also attended with no small trouble; and what is still worse, it seldom repays those who collect with a view to profit.

WE shall proceed to describe the implements that are used, and the methods that are adopted in catching insects at rest or on the wing; but, first, let me advise the Collector to handle them as little as possible, lest he

should disturb or destroy the delicate down, to which many of them owe their greatest beauty. Before he proceeds on his search, he will do well to provide himself with a stock of pins, with which he is to pierce the insects he may catch, and a small box lined with cork, or soft wood. With a pair of gauze forceps he may catch insects when at rest; but if they are on the wing, and within reach, he must use a hand-net, which may be made of any light substance, as a piece of gauze about a yard and a half square, fastened to two pliable sticks or canes, whereby it may be made to open or collapse at pleasure. If they are beyond his reach, he must use a casting net, which I have tried with considerable success. It may be made thus: tie a weight, (a halfpenny, for instance), in one of the corners of a piece of gauze, (about the size of a common handkerchief), a sixpence in the second corner, and a bit of very light wood in the third: the ine-

quality in the weight and bulk of these substances will occasion the gauze to open when thrown from the hand: a thin piece of twine, a yard or two long, may be tied to the remaining corner, by which the net may be drawn in at pleasure. The art of spreading it to its full extent may be acquired with very little practice.

HAVING caught the insects, the next thing is to preserve them. Moths, butterflies, locusts, and others of this class, may be killed by nipping them across the thorax. Wasps, bees, hornets, &c. when secured, may be treated in the same way, guarding the hand with a handkerchief; or they may be squeezed with a pair of forceps: but if the Collector be not careful in performing this operation, he will in all probability have cause to regret his want of caution. Or they may be killed by putting them into a glass immersed half way in

boiling water, and covering the top close; or by placing them on a plate under an inverted tumbler, and setting it before the fire for a minute or two. I have known gentlemen to put colleopterous insects, as beetles, wasps, &c. into a common pocket bottle half full of spirits, with which they have travelled some days, and brought them home quite perfect.

The intestines of butterflies, and large insects, should be extracted; which may be done by cutting a slit with a fine-pointed pair of scissars, at the extremity of the body, and gently pressing them out; a small roll of cotton or paper, dipped in the preservative soap, should then be introduced to keep the body in its natural form.

Insects have been frequently rendered less interesting, by packing them in cotton, which is perhaps one of the worst substances that

can be used for this purpose, as the very delicate claws, feelers, &c. of some species, are certain to become entangled in it. The best method is to stick the pins (on which they are fixed) very fast into the bottom, sides, and top of the box I have already described.—When the box is full, and the insects quite dry, a small portion of camphor should be placed securely in the corners; and the openings should be closed with pitched canvass, otherwise the ants, so numerous and overpowering in hot countries, would enter and devour the contents.

THE finest insects are brought from the tropical climates. Brazil, India, Java, China, &c. produce beautiful species.

THE insects from new countries, and those islands and remote parts which are seldom vi-

sited, cannot fail of exciting interest, either by their beauty or rarity.

THE following is the Recipe for making the Preservative Soap.—As both it and the Powder are deadly poisons, I have thought proper, by adopting the technical phraseology, to conceal (in some degree) the ingredients from those who might apply them to improper purposes.

Arsenici Oxydi	℥j
Saponis.	℥j
Potassæ Carbonatis.	ʒvj
Aquæ Saturatæ	ʒvj
Camphoræ	ʒij

The Preservative Powder.

Arsenici Oxydi pulvis.

CHAPTER IV.

On Birds.

MANY species of Birds, of surpassing beauty, have been brought by travellers from foreign countries, and have been domesticated here; and the skins of others, (whose tender nature unfits them for our colder climate), have been brought home and preserved. Thus, to a great extent, we possess the fine varieties of the feathered creation belonging to tropical climates.

THE process to be observed in taking the skin from birds, is not at all difficult; but it would greatly facilitate the acquiring dexterity in the art, to see the operation once or twice performed by a skilful practitioner.

BEFORE the operator proceeds to remove the skin, he should place the plumage as smooth as possible, and carefully clean it from any spot of blood or dirt that may appear upon it: a little piece of soft linen rag, or paper, should be placed in the mouth, which should then be sewed or tied up, to prevent any blood issuing from it. The bird should now be laid on its back, and an incision made with a knife along the breast bone, (where the feathers divide), as far as the vent, taking great care not to cut the flesh: an ivory paper knife, or the fingers, may then be introduced, to separate the skin from the breast; and some absorbent, as chalk or flour, should be applied occasionally to the inside of the skin, to prevent its adhering to the body. The thighs being gently forced up, the flesh should be cut off, leaving the bone quite clean. The skin may now be easily separated from the body down to the rump, which must be cut off; then draw

it over the back, as far as the wings, which cut off close to the body; then pushing the joint from the outside inwards, the skin will easily separate from the flesh, which must be scraped off the bones. It may then be pulled over the neck and part of the head, as far as the eyes; and the head must be pressed inwards, and separated from the neck. In the back of the skull a hole should be made with a penknife, of sufficient size to admit an instrument resembling an ear-picker, but rather larger, with which the brains, eyes, tongue, and the fleshy membranes may be extracted, taking care not to disturb the bones of the head.—The skin must be very carefully examined, (particularly about the vent and rump), and every piece of flesh or fat removed, and the feathers placed in exact order.

As the skin in this state is extremely susceptible of enlargement, the greatest precau-

tion is necessary not to extend it. The preservative powder, or soap, is now to be carefully introduced into every part; and if any appearance of moisture remain, it should be completely absorbed by a linen cloth, and the powder again applied. It is necessary to observe, that the skin must not be hung up to dry, unless a string be passed under it from the rump to the head, so that it may hang on the string, and not by any particular part, which would otherwise be stretched beyond its natural size.

The skin may now be prepared for packing, by placing the wings and extremities in their proper positions, and laying smooth the plumage: a little cotton may be put in the inside, and sewed up, to preserve the form; after which it should be carefully folded in paper, or placed between the leaves of a book, and kept free from damp.

CHAPTER V.

On Reptiles.

IN treating upon this subject, I shall principally confine myself to the methods that may be employed in catching and skinning reptiles.

THE fangs with which they defend themselves, or attack their victims, are, in venomous serpents, placed on the outside of the jaw, and so fixed, that they may be erected or depressed at pleasure; they are mostly from half an inch to three quarters long, with a

very small slit at the point, and generally a little crooked.

SERPENTS may be caught with a wire noose, fixed to the end of a pole, by passing it over their heads; and, with a pair of forceps, a bit of pointed wood may be introduced into their mouths, to extend their jaws, in order to examine them. They are easily killed, by a slight blow on the head.

THE best method of taking off the skin, is, to make a long incision from the vent, above and below, or even up to the head. The skin may then be separated, by introducing the fingers betwixt it and the body; or, if the scales are minute, the reptile may be skinned in the same manner that is commonly practised with eels. The body must be cut off from the head, and the brains, together with the eyes, and

all the fleshy parts, must be taken out, without disturbing the fangs, jaws, or tongue.—The skin may then be pulled down as far as the tail, which should be cut off an inch or two from the extremity. The body may be preserved in spirits, in order to shew the moveable ribs and flexibility of the spine.

THE skin, thus freed from the body, must be examined and cleared from flesh and fat, and the head cleaned as well as possible.—The preservative powder may be used where any muscular ligaments or flesh remain, and the soap may be applied to the skin, which must then be hung up in the air. If, after a day or two, any moisture sould appear, it must be absorbed by a cloth, and more powder applied, until every part is dry. In these operations, the scales, &c. should be attended to, and, if displaced, they should be pressed into

their exact position, before the skin is perfectly dry.

LIZARDS, alligators, frogs, &c. may be treated in the same manner. When the operation is completed, the skin should be rolled up, and packed securely in paper, and afterwards sewed up in canvass.

THE spine of a common sized serpent may be easily broken with a sharp blow from a stick; after which, I have witnessed them very vicious, boldly attacking and biting whatever was opposed to them.

I ONCE drew a rattle-snake to a hog, which devoured it, notwithstanding its bite.

VERY large serpents, such as are twenty or thirty feet long, are formidable beyond any

ideas we can entertain. I have found it difficult to disengage one, not even four feet in length, that had coiled itself round my arm, when suspended by a wire to a nail in my door.

CHAPTER VI.

On Quadrupeds.

AS it is often impossible to convey home, the quadrupeds a traveller may meet with in visiting foreign lands, it becomes necessary to take off and preserve their skins; many of which, especially those from newly discovered countries, interest us extremely, either by their beauty or their novelty.

THERE are few who have not seen a poulterer take the skin from a rabbit, or a butcher perform the same operation on a sheep or ox; a lesson from either of those persons would be of use to the traveller. In taking the skin

from large or small animals, the same process is required. The operation must commence by making a slit of any length, along the belly, so as to give the greatest facility in using the fingers, or a knife, to separate the skin, the muscles, &c. The legs of small animals may be pressed inwards, and the skin stripped over them, inside out, great care being taken in passing the joints: the feet and tail must be preserved as much as possible, by cutting out the flesh, and retaining the hoofs, nails, or claws. The skin, now freed from the extremities, and separated from the abdomen, may be stripped over the back, as far as the neck.—Particular attention will be required in stripping it from the neck to the ears and the nose, from the latter of which it must be cut off at the termination of the bone, carefully preserving the extremity. The skin, if necessary, may be cut under the jaw, as it can afterwards

be sewed up. The head of the animal may now be cut off, at the back of which a hole must be made to extract the brains; it being desirable, in small animals, to disturb the skull bones as little as possible. The ears may be cut off close to the head, and afterwards cleaned. The eyelids, lips, jaws, and teeth, must be preserved, that, when the skin is stuffed, it may appear like the animal when alive.

It is advisable to keep the carcass as whole as possible during the operation, to prevent the flowing of blood, &c. which would prove troublesome to the operator. Towels and sawdust should be at hand, to be used as wanted.

The skin, now free, must be wiped clean, the membranous and fleshy parts taken away, and the extremities, (particularly the head), kept as entire as possible, especially in small

animals. The skin being now perfectly cleaned, may have the preservative soap and powder appiled all over it; flax, or bits of rag, well annointed with the soap, may be placed in the head, nostrils, and about the hoofs, claws, and tail. It should then be laid out for a day or two; and, on a second examination, where any moisture appears, it must be absorbed by a cloth, and more powder applied, until it is quite dry. Bark in powder, and burnt alum, may also be successfully applied as absorbents.

THE skin may now be stuffed with cotton, &c. and sewn up, to keep it in some degree in its natural form: or it may be rolled up and packed in canvass, and stowed away in a case or barrel. The hides of large animals, as oxen, seals, &c. &c. are often brought from remote parts, with no other preparation than salt.

When the preservative powder is used, the operator should be very careful not to leave any of it about, lest a domestic animal should get to it and eat it. I once lost a beautiful monkey, which was poisoned by licking up a portion that was incautiously left.

I would advise the learner to practise on a squirrel, rabbit, fox, &c. and then he will be prepared for the practical difficulties he may meet with in taking the skin from the feet, head, and tail of other animals. The remaining parts of the operation are very easily performed.

CHAPTER VII.

On Plants, &c.

THERE is scarcely a more interesting science than that of Botany; and though the traveller may not be a professed botanist, yet he may be pleased with the endless variety of beautiful plants and flowers which every country produces, or gratified with the opportunity of enriching our gardens and fields by the introduction of new varieties. How much has our agricultural interest been benefited by the importation of varieties of grass, as lucern, clover, &c. and what do we not owe to him who first brought hither the potatoe? The Japan rose, and many other exotics agree so well with this

climate, that they may almost be said to be naturalised. The voyager, therefore, in distant climes, should not disregard any vegetable production. The corn, pulse, and roots that are used abroad in domestic economy, are highly worthy of his attention, in a commercial point of view. There are two public institutions in this country for the reception of vegetable productions brought from abroad. The Board of Agriculture, for grass, and whatever belongs to the economy of animals or man: and the Horticultural Society, for seeds or cuttings of fruit trees, exotic plants, &c. where every attention will be paid to their growth and culture.

Woods, bark, (dye woods), many are highly valuable in commerce, and much in request.

Lichens, (moss), some produce fine and permanent dyes, as the orchella, and are very valuable; others are medicinal, and continually in request.

Gums.—Their general use and value are well known; they always form an article of commerce, and are used for an infinite number of purposes.

Seeds of every sort, and any remarks relative to the plant, will be interesting. They must be gathered and kept dry.

Plants, leaves, or flowers, may be preserved between the leaves of a book, forming a *hortus siccus:* these are collected and preserved with very little trouble, and may be considered in two points of view:—First, as an agreeable amusement; and next, as giving that information which may become highly beneficial to society.

CHAPTER VIII.

On Minerals.

IT may be necessary to say something on minerals, in the pursuit of which the greater part of my life has been employed. A traveller who is unacquainted with metals, should procure a few in a rough state, and, by comparison, he would soon know how to discriminate one from the other A small book which the author published, called *Familiar Lessons on Mineralogy*, with colored plates, would greatly facilitate his inquiries, and cannot be too strongly recom-

mended to those who are desirous to know any thing of minerals.

Pieces of rocks, with the names of the places from whence they came, would be always interesting, as we are unacquainted whether many islands, head-lands, &c. are granite, limestone, or volcanic. Collections of rocks, with particulars concerning them, are highly desirable, in order to determine the relative connection of mountains, islands, &c.

The soil at the bottoms of streams or rivers, if gravel, generally contains interesting subjects. In India, precious stones occur in such soil: in Africa and South America, gold, platina, diamonds, rubies, sapphires, and topazes, belong to, and are always found in gravel beds, or alluvial soil, as is tin in the island of Banca. Silver, lead, copper, &c, occur in veins.

WHEREVER there are mines, (subterraneous excavations), metals of some sort or other are produced; and it surely is not burthensome to the intellect to distinguish lead ore from copper, or silver from lead, or gold from iron, or diamonds from pebbles.

PERMIT me to advise the traveller to look into the book of nature, which is always open, and learn what he can. A little information on this head may prove highly advantageous, as the wealth of nations mostly depends on the produce of their mines. It is earnestly to be recommended, wherever he goes, to bring from thence some specimens of the rocks; and if any other present themselves, he should endeavour to possess himself of them, which he might examine at leisure, with the blow-pipe: the use of this instrument, and the mode of managing it, are fully explained in a